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“Hello, World!”: Starting a Coding Group for Librarians

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Abstract

To expand skills and increase work efficiency, staff at the Atlanta University Center (AUC) Robert W. Woodruff Library formed an interdepartmental learning group for computer coding. Knowing how to code is beneficial to librarians who edit LibGuides, library websites, online courses, or who work with large data sets or repetitive tasks. The Coding Interest Group at Woodruff Library aims to enhance learning and maintain motivation through peer mentorship and shared experience. The group was formed by identifying librarians interested in coding, choosing a regular meeting time, selecting a language to learn, adopting a group textbook, utilizing online learning tools, and identifying library projects where coding knowledge can be applied. The group has experienced successes both in skill building and in interdepartmental communication and collaboration.

Keywords: academic librarians, computer programming, collaborative learning

“Hello World!”: Starting a Coding Group for Librarians

Reference questions about technology are becoming more frequent in libraries as an increasing number of patrons use digital devices and mobile apps to access library resources. Because public services librarians are usually the first to receive technology questions, a working knowledge of computer languages can often help them resolve patron technology questions without submitting work order requests to IT. Knowing the basics of HTML and CSS can enhance routine public service activities and tasks such as editing library websites, LibGuides, blogs, and courses in learning management systems. Web development skills can also help librarians find direct hyperlinks to online materials by looking at a website’s source code or locating website metadata that can influence internet searches for reference work. Something as simple as a broken link can create a roadblock to reference success, so knowing how website URLs are formed and how online directories are structured can help reference librarians locate essential online materials for patrons.

In addition to using coding knowledge with online resources, languages like Visual Basic or Python can save hours on office tasks such as processing data sets in a spreadsheet program like Microsoft Excel, organizing and utilizing large sets of addresses and form letters for a library marketing effort, or processing welfare statistics that a student has gathered for a thesis in Social Work. Recognizing the benefits of librarians who can code, staff at the Atlanta University Center (AUC) Robert W. Woodruff Library in Atlanta, Georgia formed an interdepartmental Coding Interest Group to gain coding knowledge and experience. Librarians were collaborating on projects such as updating the library’s website and investigating new tools to analyze the main collection. As a result, the coding group focused on peer instruction and learning support to enhance these collaborations and aspiring librarian coders.

Coding Interest Group founders, Justin de la Cruz and Joshua Hogan, have a combined knowledge of frontline customer service and backend systems support that has been useful in their efforts to organize the group. De la Cruz has experience as a reference librarian in public and academic libraries and has conducted technology trainings for library staff. He learned HTML through personal and professional web development projects and was exposed to other computer languages by hosting and writing about a series of public library events involving robotics and computer programming (de la Cruz, 2015). Hogan, a Metadata Librarian, aims to understand the needs of users and support the activities of librarians who directly serve the public. By adding depth to his understanding of web technologies, he hopes to enhance the digital resources offered to library users. This coding group collaboration in the Woodruff Library has helped library staff realize the various ways that librarians from all departments can contribute to public services.

Literature Review

With the rise of mobile apps, learning management systems, portable and wearable technology, broadband Internet, and the development of virtual reality systems, technology is playing a larger role in everyday life. Librarians should be attentive to the evolving needs of patrons, because in addition to their traditional needs, patrons are now searching across rapidly changing online environments, software programs, and other digital platforms. Because computer programming is at the core of all of these advances, learning how to code can benefit public service librarians by helping them understand information and how it is processed, shared, stored, and retrieved in digital environments.

There has been a strong cultural push for digital literacy. In 2015, President Obama's administration launched TechHire, an initiative to expand technical training and link tech

employers to new communities of potential software and web developers (The White House, United States Government, 2015). ConnectALL, another recent White House initiative, involves the Institute of Museum and Library Services to deliver nationwide digital literacy training to underserved communities (The White House, United States Government, 2016). Efforts to train U.S. communities on emerging technologies are mirrored in professional library organizations. The American Library Association formed a Digital Literacy Task Force to offer recommendations on libraries' roles in developing the digital skills of their communities (American Library Association, 2013), and the Association of College & Research Libraries publishes a TechConnect blog devoted to keeping librarians informed of trends in emerging technologies, website usability, innovations, and computer programming (<http://acrl.ala.org/techconnect/>).

The need to understand programming is evident from recent library job descriptions. Maceli (2015) explores the frequency of technology requirements in job postings on the Code4Lib job website (<http://jobs.code4lib.org/>). Web technologies (XML, HTML, CSS, JavaScript, etc.) are increasingly prevalent in job listings for technical positions such as Systems Librarian and for more public-facing positions such as Digital Scholarship Librarian. Maceli notes that anyone hoping to work a technical job should be prepared to constantly learn and adapt to new technologies as they are developed. Demand for technology skills is also evident in the ALA JobLIST site (joblist.ala.org), where recent listings for public services positions include language about maintaining knowledge of current trends in instructional design and educational technologies.

Limited literature on computer programming and librarians focuses mostly on why librarians should learn to code and how they can get started in doing so. Enis (2013) describes

projects carried out by participants in the 2012 ALA Library Code Year Interest Group, which highlighted the importance of coding for librarians. Many participants stress the importance of using code to harvest the “low-hanging fruit” of automating repetitive tasks such as editing MARC records, customizing web-based resources like reference chat widgets, or providing more user-friendly interfaces for online tools. Enis concludes that learning to code allows librarians to improve the usability of these digital resources. Kim (2012) describes the use of code to pull data from social media and Google Maps in order to display information on library websites to enhance library marketing and increase patron engagement with library services.

There is sparse information about how librarians can get started in coding. Yelton (2015) provides an annotated bibliography of online resources that librarians can use to learn code, including online communities like StackOverflow and code repositories like GitHub. Yelton (2015) and Kim (2012) suggest that new learners apply coding knowledge to complete real-life work projects, rely on existing sets of code in order to avoid writing from scratch, build learning communities to support this new venture, code on a regular basis, be persistent, and recognize that it is normal for learning code to be challenging. Muller and Kidd (2014) recommend that new learners start with HTML to gain confidence before taking on more challenging languages. Using these recommendations as a foundation, AUC Woodruff Library staff constructed a coding group to launch and support their learning.

Starting a Group

Specific librarians were invited to attend the first meeting of the Coding Interest Group, based on their expressed interest or background in computer programming. After the first meeting, word spread throughout the library, and other staff members expressed interested in joining the group. The group now consists of six librarians who work with the library’s online

resources and digital collections, six public services librarians, and two archivists. This composition of individuals is beneficial in strengthening collaboration between departments on shared projects that existed before the group's inception.

To determine meeting frequency, group leaders discussed the possibility and desirability of meeting on a weekly basis. Weekly meetings seemed ideal in order to ensure that group members could incrementally build upon lessons and maintain engagement with coding practice, which is especially important in the early stages of learning. When weekly meetings were proposed to the group, members decided to meet every Friday afternoon. After four months of coding, the weekly meeting structure has proven successful. Informal feedback from participants suggests that the regular practice and peer learning have been beneficial and have provided discipline in learning the subject matter.

After deciding when to meet, the group discussed what languages or skills would be best to pursue. Group leaders presented options and information about the demand for specific skills in the library field. One particularly informative source in this discussion was Maceli (2015), who found that, of the top 25 skills appearing in job listings on Code4Lib, HTML (along with CSS) and JavaScript were in the top five. Group discussion revealed a general interest in web development, because reference librarians build and maintain LibGuides and archivists build and maintain finding aids. Because all types of librarians use LibGuides, the library website's content management system, and other public-facing online resources, HTML5 and CSS were selected as the starting point for the group.

The next task was to select educational tools for learning the languages. Adopting a shared textbook or using a structured set of lessons can galvanize group learning. Library administration supported the group's goals by allocating funds to purchase up-to-date reference

books and workbooks for the computer languages being pursued. Group members collaborated to review several web development textbooks in order to pick a complete, coherent, and engaging text. Because of its balance of theory, engaging visual examples, and explanations of best practices, *HTML and CSS: Visual Quickstart Guide, Eighth Edition* by Elizabeth Castro and Bruce Hyslop was adopted as the official group text. HTML and CSS books that seemed useful as supplementary materials were cataloged and placed on reserve for group members as well as library patrons. After the textbook adoption process, the group explored popular online learning tools to provide more coding practice.

Online Learning Tools

There are several quality, low-cost or free coding resources for coding learners to consider. Some resources are education sites like Khan Academy and Coursera, which offer materials for various areas of study. Others, like Codecademy, are focused solely on computer programming. The group decided that Codecademy was an excellent place to start learning because it was free to use and offered two courses related to HTML and CSS. The interactive, gamified nature of Codecademy's offerings make it fun and easy for participants to jump in and start coding. To balance the use of Codecademy with group discussion, members were asked to complete some modules of the introductory "HTML & CSS" course (<https://www.codecademy.com/learn/web>) every week on their own. During weekly meetings, the group explored the new concepts presented by Codecademy and examined any trouble spots the participants had encountered. To provide a hands-on group experience, the authors led some weekly sessions by working through another Codecademy course structured around building a website. This format provided opportunities for interactive group learning. Whenever a new

concept arose from course materials, one member would research the topic and present it to the group.

After a few weeks of using Codecademy, the group saw an announcement for a new course on a different platform and decided to register for an introductory HTML5 course offered through edX, a site founded by Harvard University and the Massachusetts Institute of Technology. This course, “HTML5 Introduction” (<https://www.edx.org/course/html5-introduction-w3cx-html5-0x>), provides a more structured learning environment that includes weekly modules, videos, hands-on exercises, and tests. The group transitioned away from Codecademy to focus fully on edX materials. Although Codecademy was a great start for learning HTML, the edX course format provided a weekly sense of progression and accomplishment as group members worked through the materials together.

One ongoing group challenge is common for many classrooms: figuring out how to proceed with progressively harder course materials without leaving anyone behind. Faced with the reality of learning a computer language from scratch, the group quickly realized that there was a need for continual engagement with the materials. As the lessons became more involved, group members began consulting with each other outside of the set meeting times. Group organizers also began holding impromptu sessions to further assist with course materials and to field general questions.

Group Outcomes

After four months of meetings, the group has experienced several positive outcomes. All group members completed Codecademy’s introductory unit for HTML and passed edX’s HTML5 Introduction course with overall scores of 70% or higher. All members have a demonstrated ability to parse HTML and CSS, find and correct errors in existing website code,

and write basic HTML and CSS from scratch. One unexpected benefit of having weekly interdepartmental meetings with staff is information sharing about current work projects in each department. Public services librarians, digital services librarians, and librarians from other departments can now interact and share information face-to-face on a regular basis. This increased communication has resulted in better interdepartmental understanding and new collaborations unrelated to the coding group.

Several group members have demonstrated how learning web development has helped them in their library work. Because of her participation in the coding group, a reference librarian was able to recommend resources for a student who was interested in learning HTML. She helped the patron find a good book on the subject and recommended Codecademy and edX for further learning. A few public services librarians have used information from the group to find and fix errors in their LibGuides and to enhance the library's website. As a result of the coding group, one digital resources librarian expressed increased confidence in discussing website management systems with vendors and colleagues. He believes that coding languages should be taught in all Library Science programs.

Overall, group members have enjoyed the experience of learning to code. They describe the group learning experience as fun, relaxed, and team-oriented. At least one participant has reported full engagement with every coding activity the group has completed. Several members have said that they enjoy the regularity of the weekly meetings, with one enthusiastically reporting that she always looks forward to 3:00 PM on Fridays. In light of these experiences and the group's ongoing engagement in learning, there will continue to be regular group meetings in the future to support members' learning efforts.

Moving Forward

The next steps for the Coding Interest Group, in line with suggestions in the literature, will be to find practical uses for HTML and CSS in the workplace. The group will split into small teams to update old library web pages, create new materials for existing research guides, and address other issues. Muller and Kidd (2014) suggest documenting learning experiences to help new learners avoid previous mistakes. The librarians involved in this group plan to develop an archive of their efforts, including what challenges and questions arose the most when learning HTML. Through this project, they hope to inform future learners.

Group leaders will continue learning other computer languages with the Coding Interest Group. Library needs and participant interest will help determine which language to learn next. Possible candidates are Python, Ruby, Javascript, and XML. Andromeda Yelton recommends that beginning coders learn Python and Ruby, because these languages are approachable and their communities are more inviting to women who code (Enis, 2013). Knowledge of XML and its related programming languages allows librarians to create, manipulate, and transform XML documents, which is helpful in assisting faculty and students on an increasing number of projects in the Digital Humanities and other digital scholarship. Librarians who possess knowledge of these technologies can position themselves to take a critical role in advising and assisting with digital scholarship across the curriculum.

Learning how to code is an ambitious endeavor for anyone. Yelton (2015) emphasizes that new learners will likely be intimidated and will experience frustration as they work on understanding new concepts—but this is to be expected. By giving group participants a voice in choosing what to study, meeting on a regular basis, sharing challenges and successes, progressing through structured courses together, and planning projects based on real-world outcomes, librarians can establish successful, interactive group learning environments to explore

computer programming. Efforts similar to those at the AUC Robert W. Woodruff Library, as well as further literature on the benefits of coding librarians, can serve to better inform the LIS community on how to learn these skills that are vital to the evolution of the profession.

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